



DEPARTMENT OF TRANSPORTATION  
HAZARDOUS MATERIALS REGULATIONS BOARD  
WASHINGTON, D.C. 20590

20837

[Docket No. HM-57: Amdts. 172-20, 173-74,  
178-26]

**CLASSIFICATION AND PACKAGING OF  
CORROSIVE MATERIALS**

The purpose of these amendments to the Hazardous Materials Regulations is to amend §§ 172.5, 173.119, 173.245, 173.245b, and 178.343-5 to specify certain shipping names and to add authorized packagings for the shipment of corrosive materials.

On February 12, 1973, the Hazardous Materials Regulations Board published a notice of proposed rulemaking, Docket No. HM-57; Notice No. 73-1 (38 FR 4270), which proposed these amendments. Interested persons were invited to give their views and many comments were received by the Board.

1. *Shipping descriptions.* Several commenters requested the inclusion of additional shipping names and packagings which were not the subject of Notice No. 73-1. Since these were not proposed to be added to the regulations, it would be more appropriate for the Board to handle these requests in a separate notice of proposed rule making to allow for adequate comment. The Board intends to publish such a notice.

2. *Drum size limitation for corrosive solids.* One commenter noted, in a petition for reconsideration in Docket HM-57, Amendment No. 173-61, that the 55-gallon capacity limitation for corrosive solids in § 173.245b(a)(4) was too restrictive in view of their experience in shipping drums of larger size. In view of the Board's previously stated position in packaging requirements for solids, (See 36 FR 11304 and 15762, 37 FR 5946) and on the basis of the reported satisfactory experience, the Board agrees with the commenter and has removed the size restriction in the subject paragraph.

3. *Inside PE container for corrosive liquids.* One commenter stated that § 173.245(a)(16), as proposed, should be changed to provide for a certain high

density, non-DOT specification, 55-gallon capacity polyethylene inner container for shipping corrosive liquids, n.o.s. The commenter cites satisfactory experience with the use of such an inner container for materials previously not considered regulated. Such a change was not proposed in the notice. The Board, however, is considering a proposal to amend the inner container specifications. Meanwhile, it believes such packaging should be approved only under the terms of a special permit so that it can study the experience factor more closely. Since similar permits now exist, this commenter should petition the Board for a special permit so that the Board may add his experience to that being obtained under other permits.

4. *Corrosive material definition.* Several comments were made on the Board's proposal to adjust the corrosive material definition (§ 173.240) to coincide with certain proposals by the Commissioner of Food and Drugs (FDA) (37 FR 27635). The Board's proposals were mainly related to handling of test animals and detail on preparation of the test material. Before acting on this proposal, the Board is awaiting the outcome of the Food and Drug Administration's rule making. However, as stated in the preamble of Notice No. 73-1, the Board continues to believe that any changes it proposed will not materially alter the classification of materials severely corrosive (that cause destruction or irreversible alteration) to human skin. When the FDA rule making action is completed, the Board will then consider all the comments received on the definition in § 173.240 and the FDA decision.

5. *Test animals.* One commenter pointed out the difficulties in relating results of tests on rabbit skin to the results on human skin contact, particularly with respect to materials proven not corrosive to human skin although giving positive results under rabbit skin testing. This commenter went on to state that such a substance need not be labeled

under the provisions of the Federal Hazardous Substances Act. The Board points out that this was one of the primary reasons for the adoption of § 173.240(b). This paragraph specifically alludes to human experience. There is a mechanism, established by the Board, whereby materials may be "declassified" by its action. It should be noted, however, that the Board, under the same provision, may "classify" a material because of human experience without being strictly limited to the quantitative rabbit skin test results. In conclusion on this matter, the Board chose rabbit skin testing for its criteria because it wanted to use recognized methods and not establish completely new criteria. To have established new criteria would have posed a different series of difficulties for manufacturers.

6. *Ethylene dichloride*. Based on a comment the Board has removed ethylene dichloride from the list (§ 172.5) of flammable liquids which are also corrosive. The Board will study this matter in more depth.

7. *Cargo tank density limitations*. Several comments were made objecting to the proposed lading density limitation of 10 pounds per gallon when transporting a corrosive material in a DOT specification MC 304 or MC 307 cargo tank. The regulation has been amended to remove the restriction for MC 307 cargo tanks since the weight of lading is adequately controlled by § 178.340-10(b)(1) wherein such a cargo tank has a maximum product load limitation established by regulation. This maximum product load must be marked in pounds on the metal certification plate attached to each MC 307 cargo tank. Also, the proposed regulation has been amended to remove the reference to a lading weight restriction for MC 304 based on the comments and reports of operation and experience received indicating that such a restriction is not justified.

8. *Tank car bottom outlets*. Objections were made to the "interim" authorization for bottom outlets on tank cars. The Board recognizes that this situation creates some serious difficulties with respect to program planning, cost allocations, leasing, long-term operations, forecasts, etc. It does, however, have comments on file questioning the safety of permitting bottom outlets on tank cars containing certain corrosive materials. While the Board has not completed its evaluation of the reported problems, it nevertheless believes that it would be misleading to provide for bottom outlets in § 173.245 without an appropriate warning that such authorization is provided temporarily pending a final decision. On the other hand, the Board does not consider it has progressed far enough in its evaluation to justify any curtailment of such cars in the services where they are used. Therefore, the Board is using an "interim" solution which it considers to be appropriate under these circumstances.

9. *Emergency discharge controls*. Several comments were received objecting to

a requirement for heat actuated and remote control mechanisms in bottom outlet valves as proposed for MC 304, MC 310, MC 311, and MC 312 cargo tanks liquids. The Board agrees that the requirement for a heat-actuated mechanism, in view of the nature of the lading, is not justifiable under conditions of transportation as known today. The Board, however, believes that the remote control mechanism is necessary to provide adequate safety in handling corrosive materials. The comments that objected to the need for the remote control shut-off argued that such a shut-off was unnecessary. But duplication with respect to control is known to exist in several plants handling these materials. The concern for an adequately safe operation in unloading the tank truck should be of the same order of importance as the plant handling of the material. It is of interest to note that the National Transportation Safety Board (NTSB) in its report NTSB-HAR-72-3, a truck-automobile collision involving spilled methyl bromide, observed that "substantial differences exist between methyl bromide hazard control measures exercised in manufacturing plants and those found in transportation in this accident." The NTSB concluded: "Inplant hazard control procedures should be considered by the regulators in developing future changes in transportation regulations." The Board (HMRB) believes such an analogy exists here. The requirement for a second station in the event of incident involving the discharge point sta-

tion is consistent with safety engineering practices in use and is not overburdening when considering the plant safety procedures in use for handling corrosive materials. Therefore, the Board is requiring use of a remote station except when liquids contain solids in suspension in sufficient quantity that settling may form a layer of solid material that may interfere with sealing of the valve seat.

10. *"Grandfather" clause*. Several commenters pointed out the difficulty in handling materials which were in the distribution system before the effective date of these amendments. The Board considers these comments valid and has provided a limited "grandfather" clause. See Note 1 to § 173.240.

11. *Inside plastic receptacles for corrosive solids*. In Notice No. 71-17, the Board proposed to authorize plastic receptacles as inside packagings for shipment of corrosive solids covered by § 173.244(c). This type of packaging was inadvertently omitted from Amendment No. 173-61. This oversight has been corrected by amending § 173.244(c).

In view of the foregoing, 49 CFR Parts 172, 173, and 178 are amended as follows:

# **PART 172—LIST OF HAZARDOUS MATERIALS CONTAINING THE SHIPPING NAME OR DESCRIPTION OF ALL MATERIALS SUBJECT TO PARTS 170-189 OF THIS SUBCHAPTER**

In § 172.5 paragraph (a), the List of Hazardous Materials is amended as follows:

## **§ 172.5 List of hazardous materials.** (a) \* \* \*

Article	Classed as—	Exemptions and packing (see sec.)	Label required if not exempt	Maximum quantity in 1 outside container by rail express
(Change)				
Crotonaldehyde.....	F.L.....	173.118, 173.119(m).....	F.L.....	10 gallons.
Diethylamine.....	F.L.....	173.118, 173.119(m).....	F.L.....	10 gallons.
Propylene oxide.....	F.L.....	173.118, 173.119(m).....	F.L.....	10 gallons.
(Add)				
Caustic soda, dry, solid, flake, bead, or granular.....	Cor.....	173.244, 173.245b.....	Corrosive.....	100 pounds.
*Phosphoric acid, liquid, or Phosphoric acid solution.....	Cor.....	173.244, 173.245.....	Corrosive.....	10 gallons.
Sodium hydroxide, dry, solid, flake, bead, or granular. See Caustic soda.				

## **PART 173—SHIPPERS**

A. In § 173.119, paragraph (m)(4) is amended; paragraphs (m)(9), (10), (11), (12), (13), (14), and (15) are added to read as follows:

§ 173.119 Flammable liquids not specifically provided for.

(m) \* \* \*

(4) Specification 5, 5A, 5B, 5C, 5P, 17C (single-trip), or 17E (single-trip) (§§ 178.80, 178.81, 178.82, 178.83, 178.92, 178.115, 178.116 of this subchapter). Metal barrels or drums. Removable head packagings over 16 gallons capacity are not authorized. Authorized only for materials which will not react dangerously with the drum metal, or be decomposed by contact with it.

(9) Cylinders as prescribed for any compressed gas, except acetylene. All cylinder valves must be protected by one of the methods described in § 173.301(g)(1), (2), or (3). See § 173.34 (e)(16).

(10) Specification MC 304: Tank motor vehicle meeting § 178.343-2(c) of this subchapter. If the cargo tank is constructed with bottom outlets, they must meet § 178.342-5(a) of this subchapter.

(11) Specification MC 307 (§§ 178.340, 178.342 of this subchapter). Tank motor vehicle meeting § 178.343-2(c) of this subchapter.

(12) Specification MC 310, MC 311, or MC 312 (§§ 178.340, 178.343 of this subchapter). Tank motor vehicles. If the cargo tank is constructed with bottom outlets, they must meet §§ 178.342-5(a) and 178.343-5 of this subchapter.

(13) Specification 103AW, 103A-ALW, 103ANW, 103BW, 103CW, 103EW, 111A100F2, 111A60ALW2, 111A60W2, 111A60W5 (§§ 179.200, 179.201 of this subchapter). Tank cars. All special requirements for tank cars according to flashpoint, vapor pressure, and viscosity in paragraphs (a) through (L) of this section apply.

(14) Specification 105A100W or 112-A200W (§§ 179.200, 179.201, 179.100, 179.101 of this subchapter). Tank cars. Authorized only for propylene oxide.

(15) Specification 103ALW, 103DW, 103W, 104W, 111A60ALW1, 111A60W1, 111A100W3, 111A100W6, 115A60W6, or AAR206W (§§ 179.200, 179.201, 179.220 of this subchapter). Tank cars. All special requirements for tank cars according to flashpoint, vapor pressure, and viscosity in paragraphs (a) through (L) of this section apply. (See Note 1.)

NOTE 1: Authorized only on an interim basis pending the Department's decision on use of bottom outlets for tank cars containing hazardous materials.

B. In § 173.240, foot note 1 is added to read as follows:

§ 173.240 Corrosive materials; definition.<sup>1</sup>

C. In § 173.244, paragraph (c) is amended to read as follows:

§ 173.244 Exemptions for corrosive materials.

(c) Corrosive solids, except those for which no exemptions are provided as indicated by the "No exemption" statement in § 172.5 of this subchapter in inside earthenware, glass, plastic, or paper receptacles of not more than 5 pounds capacity each or in inside metal, rigid fiber or composition cans or cartons, or rigid plastic receptacles, of not more than 10 pounds capacity each, overpacked in metal, wooden, or fiberboard outside containers not exceeding 25 pounds net weight each are, unless otherwise provided in this part, exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 177 of this subchapter, except § 177.817.

D. In § 173.245, paragraph (a) (16) is amended; paragraph (b) and paragraphs (a) (28) through (32) are added to read as follows:

§ 173.245 Corrosive liquids not specifically provided for.

(a) \* \* \*

(16) Specification 6D or 37M (nonreusable container) (§§ 178.102, 178.134 of

<sup>1</sup> A corrosive material, not subject to the definition previously in effect in § 173.240, packaged before December 31, 1973, may be shipped and transported without being subject to any of the requirements in 49 CFR Parts 170 to 179 until December 31, 1974. As of January 1, 1975, these materials may not be shipped or transported unless they are in compliance with 49 CFR 170 to 179.

this subchapter). Cylindrical steel overpacks with inside spec. 2S, 2SL, or 2U (§§ 178.35, 178.35a 178.24 of this subchapter) polyethylene packaging.

(28) Cylinders as prescribed for any compressed gas, except acetylene. All cylinder valves must be protected by one of the methods described in § 173.301 (g) (1), (2), or (3). See § 173.34(e) (16).

(29) Specification MC 304. Tank motor vehicle meeting § 178.343-2(c) of this subchapter.

(30) Specification MC 307 (§§ 178.340, 178.342 of this subchapter). Tank motor vehicle meeting § 178.343-2(c) of this subchapter.

(31) Specification MC 310, MC 311, or MC 312 (§§ 178.340, 178.343 of this subchapter). Tank motor vehicles. If cargo tank is constructed with bottom outlets, they must meet § 178.343-5 of this subchapter.

(32) Specification 103AW, 103A-ALW, 103ANW, 103BW, 103CW, 103EW, 111A100F2, 111A60ALW2, 111A60W2, 111A60W5, (§§ 179.200, 179.201 of this subchapter). Tank cars.

(33) Specification 103ALW, 103DW, 103W, 104W, 111A60ALW1, 111A60W1, 111A100W3, 111A100W6, 115A60W6, or AAR206W (§§ 179.200, 178.201, 179.220 of this subchapter). Tank cars. (See Note 1.)

NOTE 1: Authorized only on an interim basis pending the Department's decision on use of bottom outlets for tank cars containing hazardous materials.

(b) If a material classed as corrosive is corrosive to steel or aluminum according to § 173.240(a) (2) and is not corrosive to skin according to § 173.240(a) (1), it is not subject to any requirements of this subchapter for rail or highway when transported in a tank car tank or cargo tank constructed entirely of materials that will not react dangerously with or be decomposed by the commodity being transported.

E. In § 173.245a, the introductory text in paragraph (a) is amended and paragraph (b) is added to read as follows:

§ 173.245a Corrosive liquids, n.o.s. shipped in bulk.

(a) Corrosive liquids, n.o.s. which are listed in the following table, may not be shipped in bulk unless they are packaged as follows:

(b) Corrosive liquids, n.o.s., except those listed in paragraph (a) of this section, when shipped in bulk, must be packaged as prescribed by § 173.245.

F. In § 173.245b, paragraph (a) (11) is deleted and paragraphs (a) (2), (4), (5), and (7) thru (10) are amended to read as follows:

§ 173.245b Corrosive solids not specifically provided for.

(a) \* \* \*

(2) Fiberboard box with inside paper bags, not over 50 pounds total net capacity.

ity. When shipped by water, each box must include a moisture barrier.

(4) Metal drum.

(5) Fiber drum not exceeding 550 pounds net weight and not over 55-gallon capacity. When shipped by water, each drum must include a moisture barrier.

(7) Bag: Each bag filled to weight with product and closed as for shipment must be capable of withstanding four drops from a height of 4 feet onto a solid surface, one drop on each end and one drop on each face, without sifting or rupture. Authorized net weight not to exceed 110 pounds. When shipped by water, each bag must include a moisture barrier.

(8) Metal portable tank or closed bin of not over 660-gallon capacity and 7,000 pounds gross weight.

(9) Fiberglass or rubber tank or closed bin of not over 74-cubic-foot capacity.

(10) Metal sift-proof cargo tank or tank car, or hopper-type or pneumatic bulk vehicle.

(11) [Deleted]

## PART 178—SHIPPING CONTAINER SPECIFICATIONS

Section 178.343-5 is amended to read as follows:

§ 178.343 Specification MC 312; cargo tanks.

§ 178.343-5 Outlets.

(a) Each outlet at or near the top of a tank, used for discharge of lading, must be equipped with a shutoff valve located as close as practical to the point of outlet from the tank. Each such outlet having its discharge end below the top liquid level in the tank must be equipped with an additional shutoff valve, blank flange, or sealing cap at the discharge end of the outlet.

(b) Except as provided in paragraphs (c) and (d), of this section; each bottom outlet must be equipped with a shutoff valve designed, installed, and protected as follows:

(1) Product piping must be protected to assure against the accidental escape of contents by a shear section located outboard of each valve seat and within four inches of the vessel.

(i) The shear section must be machined to abruptly reduce the wall thickness of the adjacent piping (or valve) material by at least 20 percent so that it will break under strain and leave the valve seat and its attachment to the vessel and the valve head intact without leakage of the lading.

(2) Each bottom outlet valve must be located inside the tank or immediately adjacent at the outlet point outside the tank.

(i) The valve seat must be located inside the tank or within the welded flange nozzle or coupling at the point of outlet from the tank.

(ii) Each bottom discharge valve must be equipped with a remote means to activate a valve closure manually from a point no less than 10 feet away.

(3) In addition, a blank flange, sealing cap, or shutoff valve is required at the discharge end of the outlet.

(c) A bottom opening for purposes other than lading discharge may be closed by a bolted blank flange at the tank shell. If any piping extends from such an opening, it must be fitted with a shutoff valve designed, installed, and protected as described in paragraph (b)(1) of this section. In addition a supplemental closure is required at the discharge end of this piping.

(d) Bottom outlet valves need not meet subparagraph (b)(2)(ii) of this section when the cargo tank is transporting a corrosive liquid containing solids in suspension in sufficient quantity that settling may form a layer of solid material that may interfere with sealing of the valve seat.

This amendment is effective December 31, 1973. However, compliance with the regulations, as amended herein, is authorized immediately.

(Secs. 831-835, Title 18, U.S.C., sec. 9, Department of Transportation Act, 49 U.S.C. 1657, title VI and sec. 902(h), Federal Aviation Act of 1958, 49 U.S.C. 1421-1430, 1472(h), 1655(c).)

Issued in Washington, D.C. on July 27, 1973.

C. R. MELUGIN, Jr.,  
Board Member, for the  
Federal Aviation Administration.

ROBERT A. KAYE,  
Board Member, for the  
Federal Highway Administration.

MAC E. ROGERS,  
Board Member, for the  
Federal Railroad Administration.  
[FR Doc.73-15914 Filed 8-2-73;8:45 am]

FEDERAL REGISTER, VOL. 38, NO. 149—FRIDAY, AUGUST 3, 1973

17880

DEPARTMENT OF TRANSPORTATION  
OFFICE OF THE SECRETARY  
Washington, D.C. 20590

Official Business

PENALTY FOR PRIVATE USE, \$300

POSTAGE AND FEES PAID  
DEPARTMENT OF  
TRANSPORTATION  
DOT 518

